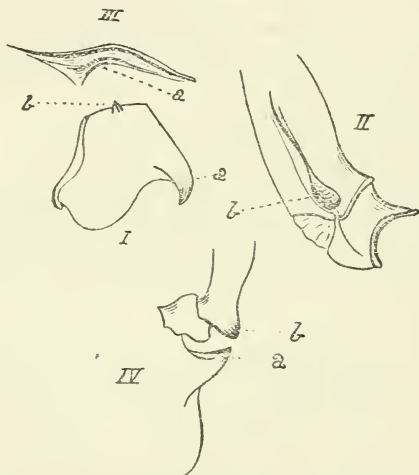


spines on tibia ii. and performing with the palpi the act of copulation.

I may remark that in those species in which there is no hook on coxa i. of the legs there is also an absence of the specialized groove at the base of femur ii.



Aranea purpurascens, O. P.-Cambridge, ♂.

- I. Coxa of the first leg, with (a) the hook-like apophysis and (b) the conical tubercle.
- II. Femur (and trochanter) of the second leg, with (b) the groove into which the hook-like apophysis fits.
- III. Portion of the margin of the carapace, showing at a the chitinous ridge, used in correlation with the tubercle on coxa i.
- IV. Coxa, trochanter, and base of femur of the pedipalp, showing the specialized tubercles, on the coxa at a, on the femur at b.

VIII.—Notes on Forficulidæ, with Descriptions of new Species in the Collection of the Natural History Museum, South Kensington. By W. F. KIRBY, F.L.S., F.E.S.

I HAVE now completed the arrangement of the collection of Orthoptera in the Natural History Museum, and am preparing for press my working catalogue of the whole order, which, it is hoped, will be completed in the course of next year.

While comparing the catalogue with the collection, I propose to publish preliminary notes on doubtful points of synonymy and occasional descriptions of new species, which can then be incorporated in the catalogue as printed. The present paper forms the first of the proposed series.

Genus *DIPLATYS*, Serv.

Diplatys Ridleyi, sp. n.

Long. corp. 11 millim. ; segm. ult. cum forc. $2\frac{1}{2}$ millim.

Female.—Head black above; labrum shining reddish brown, with a transverse pale yellow stripe at its base; head beneath dull reddish, as are also the antennæ and palpi; second joint of antennæ pale yellow. Pronotum and scutellum tawny; tegmina deep black; wing-scales blackish, bordered within with pale yellow. Abdomen dull red, blackish towards the extremity, and with large black spots on the sides; forceps reddish, upcurved, rather long, with the tips crossing. Legs black, the base and tip of the femora and tibiæ and more or less of the tarsi pale yellow.

Hab. Singapore (*H. N. Ridley*).

Allied to the African *D. macrocephala*, Beauv., but in that species the head and legs are not so black and the tegmina are reddish at the base.

Genus *PYGIDICRANA*, Serv.

Pygidicrana frontalis, sp. n.

Long. corp. 18 millim. ; segm. ult. cum forcip. 6 millim. ; long. tegm. $3\frac{1}{2}$ millim. ; cum alis $4\frac{1}{2}$ millim.

Tagalina caffra, De Bormans (in coll.).

Male.—Head testaceous; occiput and sides of hinder lobe as far as the eye, the front except towards the base of the antennæ, and a band from the eyes to the base of the palpi black; antennæ at least 26-jointed, testaceous; pronotum with two very broad blackish or reddish-brown bands, almost meeting behind, and leaving only a long oval space between them and a narrow lateral border, testaceous. Scutellum and tegmina testaceous; the latter with two broad reddish-brown bands on each, only separated by a pale line, the outer bands darker. Wing-scales short, pale yellow, bordered outside with brown. Abdomen reddish brown. Under surface of the body reddish brown, shading into yellowish on the pectus and lower part of the head. Legs testaceous; femora striped above with pale reddish brown. Forceps thick, triangular, curving inwards to a projecting blunt angle on their

lower surface just beyond the middle, and then raised and converging to meeting points; the inner surface of the terminal curve very finely denticulated.

Hab. Cameroons (De Bormans's collection; one specimen, received by him from Brunner von Wattenwyl).

Dohrn's description of *P. caffra* (Stett. ent. Zeit. xxviii. p. 343, 1867) was based on female specimens. It is a larger insect than that here described, and differs in colour and markings. It is possibly the female of the male described and figured as *P. caffra* by Karsch (Berlin. ent. Zeitschr. xxx. p. 87, pl. iii. fig. 5), from Zanzibar. Whether this is so or not, the forceps of the insect figured by Karsch differ so much from those of the two African species here described as new, that it cannot possibly be referred to either of them. De Bormans's description ('Tierreich,' Forf. p. 19) seems to be based upon the descriptions of Dohrn and Karsch.

Pygidicrana Bettoni, sp. n.

♂.—Long. corp. 29 millim.; segm. ult. cum forcip. 9 millim.; long. tegm. 4 millim.; cum alis 5 millim.

♀.—Long. corp. 27 millim.; segm. ult. cum forcip. 8 millim.; long. tegm. 4 millim.; cum alis 5 millim.

Head marked as in the last species, but the front testaceous, with a longer or shorter black oval spot in front; antennæ testaceous, 36-jointed; pronotum testaceous, with two broad, widely separated, blackish bands; tegmina reddish brown, with the outer margin narrowly testaceous, and a broad oval spot occupying the centre of the basal half. Wing-scales testaceous. Abdomen reddish brown, paler towards the base in the female; clothed with a greyish pubescence, expanded towards the extremity in the male, and with two tubercles, as in *Labidura*. Forceps of the male nearly as in *P. frontalis*, but more depressed and the projection nearly rectangular; forceps of the female of the usual form, contiguous, and slightly curving upwards. Legs pale yellowish testaceous; femora with a pale reddish stripe, bordered below with black, in the middle of the outer area.

Hab. British East Africa (Samburu and Voi); collected by Mr. C. S. Betton. An immature specimen from Nyasaland (*Mr. A. Whyte*).

Pygidicrana guttata, sp. n.

Pygidicrana guttata, De Borm., MS.

Long. corp. 21 millim.; segm. ult. cum forcip. $5\frac{1}{2}$ millim.

Male.—Antennæ 26-jointed, joint 2 very short, 3 expanded

at the end, and as long as 4 and 5 together, which are rounded, as also 6 and 7, the succeeding ones becoming gradually longer and slender and then slightly shortening towards the tip. Head above and pronotum dull red; antennæ and palpi paler; hinder part of pronotum bordered with pale yellowish at the sides: tegmina about twice as long as broad, concave on the costal margin; black, with a round tawny spot at the base, and a larger and slightly paler irregular spot at the extremity: wing-scales yellow. Legs reddish tawny; tibiæ shading into yellowish above. Abdomen not expanded at the extremity, but with parallel sides, reddish brown, with a slight greyish pubescence, lightest at the base; forceps shining black, contiguous, upcurved, with the tips crossing. Under surface of head and pectus reddish tawny.

Hab. "Bua Kraeng, South Celebes, 5000 feet, February 1896, H. Fruhstorfer" (from De Bormans's collection).

Allied to *P. Horsfieldii*, Kirb., from Java.

Pygidicrana atriceps, sp. n.

Long. corp. 15 millim.; segm. ult. cum forcip. $3\frac{1}{4}$ millim.

Male.—Antennæ 24-jointed; head above and front half of pronotum dull black; antennæ, a dot within each eye, palpi, lower mouth-parts except the mentum, which is blackish, and hinder part of pronotum testaceous yellow; tips of antennæ, pectus, and legs rather darker testaceous; intermediate and hind femora with a slender black stripe above. Tegmina dark reddish brown, slightly concave on the costal edge and with a long yellowish spot, pointed towards the end, on the basal half of each. Wing-scales straw-colour. Abdomen chestnut-brown above, pubescent, rather paler beneath, and slightly expanded towards the extremity. Forceps thick, contiguous, denticulate on the lower carina, and with a slight tooth beyond the middle on the upper inner carina; tips turned upwards and crossing.

Hab. Rockhampton, Queensland.

Allied to *P. Daemeli*, Dohrn.

Genus LABIDURA, Leach.

This genus falls naturally into four groups, represented by *L. riparia*, Pall., *L. lividipes*, Duf., *L. tenuicornis*, Borm., and *L. Clarki*, Kirb., all of which will perhaps ultimately form the types of distinct genera.

The greatest uncertainty prevails in the first section, in which the males are usually very dissimilar in the shape of

the forceps, while the females are scarcely distinguishable. At present it is uncertain how far this may be a case of sexual polymorphism resembling that of the genus *Forficula*, L., itself (more remarkably in *Odontolabis*, Hope, in the Coleoptera, and *Iliades*, Hübn., and other Equitine genera in the Lepidoptera), or whether the various forms represent closely allied but really distinct species.

Group of Labidura riparia.

Much confusion has been caused in this group by Dohrn and De Borimans treating most of the forms belonging to it as subspecies of *L. riparia*, and distributing the various names applied to them under these subspecies, without any regard to the original localities and descriptions. Hence the idea that *L. riparia* is a very variable species, occurring all over the world. The pale typical form described by Pallas from Western Asia is found also in South Europe, North Africa, and perhaps in other parts of Africa; but I doubt if it is indigenous in either South-eastern Asia or America. A large amount of material and, perhaps, breeding experiments would be necessary to throw full light on the question; but in the meantime the following preliminary notes may be useful:—

1. *L. bengalensis*, Dohrn.

Very distinct from any other form in the shape of the forceps in the male, and usually also in the female, but some small females, in which the inner edge of the forceps is less crenulated than usual, somewhat approach large females of *L. riparia*, in which this character is more conspicuous than usual.

There is a broken specimen from Sokotra, perhaps belonging to this species, in the collection, and a very dark female, agreeing better with this species than with any other, from Portugal, collected by Rev. A. E. Eaton.

2. *L. riparia*, Pall.

Undoubted synonyms of the typical form of this species are *gigantea*, Fabr., *bilineata*, Herbst, *maxima*, Vill., and *morbida*, Serv. All other alleged synonyms are more or less doubtful.

Var. *mixta*, Bol.

From Cadiz. Distinguished by having a double black line on the abdomen both above and below. An immature specimen in the Museum from Spain has the double line above, and probably belongs to this form.

Var. *inermis*, Brunn.

Insufficiently described, but wants the two points at the extremity of the abdomen, and the central tooth on the inside of the forceps is nearly obsolete. Recorded by Brunner from Austria and Servia. I identify a light-coloured specimen from Spain with this form.

3. *L. marginella*, Costa.

A small dark form, from Vesuvius, wanting the anal points in the male. Krauss regards it as a local form of *L. riparia*, and as identical with *inermis* of Brunner.

4. *L. bicolor*, Fisch. Waldh. }
5. *L. Fischeri*, Fisch. Waldh. }

Doubtful forms from the north coast of the Black Sea, which will doubtless be recognized when other specimens are brought from that locality. The first is not figured, and the second hardly seems to be a true *Labidura*, judging from the description and figure.

6. *L. distincta*, Rodz.

Another doubtful form from Transcaucasia (unfigured).

7. *L. pallipes*, Fabr.

This name is usually applied to the dark form of *L. riparia*; but the types are lost, and the insect cannot be identified till more specimens are received from its locality, the Cape Verde Islands.

8. *L. herculeana*, Fabr.

A doubtful form from St. Helena. I believe the type is still extant at Kiel.

9. *L. terminalis*, Serv.

A Mauritian insect. There is only one female specimen in the Museum, which is not sufficient to elucidate this form.

10. *L. auditor*, Scudd.

A South-African form (unfigured) which I have not seen.

11. *L. crenata*, Oliv.

A South-African form, without anal points in the male, but with a second smaller tooth on the inner side of the forceps in the male, as in *L. icterica*; the forceps of the female strongly crenulated.

12. *L. icterica*, Serv.

From India, Ceylon, and China. Pale coloured; no anal points; generally a second tooth on the inside of the forceps in the male, and in large specimens the space between the central tooth and the tip crenulated. I regard *L. Servillei*, Dohrn, and *japonica*, De Haan, as probably varieties of this insect. The European specimens called *inermis* may also belong to it.

13. *L. granulosa*, Kirb.

A very large dark-coloured form from the Philippines, of which the Museum now possesses both sexes.

14. *L. pluvialis*, Kirb.

Another very dark form, from Raine Island, Queensland, but narrower than the last.

15. *L. truncata*, sp. n. (*infra*).

There are several other doubtful forms in the Museum which do not agree with any extant descriptions, but which I do not feel justified in describing at present.

16. *L. bidens*, Oliv.

Described from Jamaica: *erythrocephala*, Fabr., South-American Islands; *bivittata*, Burm., from San Domingo, Porto Rico, and Colombia; and *affinis*, Guér., from Cuba, appear to be the same species. It is easily recognizable from the descriptions; but, though agreeing with *L. riparia* in many respects, especially in possessing the anal points wanting in most of the other forms resembling *L. riparia*, I think it is in error that various entomologists have included European and other forms with it as a subspecies of *L. riparia*.

L. bidens seems to be common in the West Indies. The Museum has undoubted specimens from Haiti and St. Bartholomew, and also from Mexico.

17. *L. suturalis*, Burm.

Described from Colombia. Distinguished from the last form by wanting the anal points.

*Group of L. lividipes.*18. *L. lividipes*, Duf.

A South-European species which extends to Asia and Africa. The following names are probably synonymous:—

meridionalis, Serv., *pallipes*, Duf., *Dufourii*, Scudd., and *inconspicua*, Kirb. I am more doubtful about *castanea*, Serv., described from an unknown locality, and *vicina*, Luc., from Algeria. I am inclined to think that the last insect may possibly be distinct.

Group of L. tenuicornis.

19. *L. tenuicornis*, Borm.

A slender species, hardly belonging to the genus.

Group of L. Clarki.

20. *L. Clarki*, Kirb.

De Bormans suggests that this species may belong to *Pyragra*. It does not agree well either with *Pyragra* or *Labidura*, but one specimen is hardly enough to found a new genus on.

I add here the description of an uncharacterized form of *Labidura*:—

Labidura truncata, sp. n.

Labidura truncata, Westw., MS.

♂.—Long. corp. 24–30 millim.; segm. ult. cum forcip. 8–10 millim.

♀.—Long. corp. 18–20 millim.; segm. ult. cum forcip. 6–7 millim.

Antennæ at least 29-jointed; body tawny; the thorax except at the edges, the wing-cases except the borders and suture, and the middle of the abdomen except the last segment above, blackish or reddish brown; last segment of abdomen without anal points, but with a small blackish tubercle above the base of each of the forceps. Forceps triquetral, gradually curved, and crossing at the extremities; those of the male crenulated on the inner edge to the middle, where stands a projecting tooth (sometimes nearly obsolete), and there is always a second just before the extremity of the forceps; in the female the forceps are strongly crenulated on the inner side towards the base. The wing-scales in both sexes are usually either absent, or largely developed, covering nearly two segments of the abdomen, and, if developed, they are wholly brown except on the edges.

Hab. Australia (Melbourne, Adelaide, Sydney, Moreton Bay).

The male of this form may always be distinguished from

L. icterica, Serv., by the second tooth of the forceps being placed, not halfway between the first and the extremity, but close to the extremity; the female, however, is scarcely distinguishable from that of *L. icterica*.

Genus DEMOGORGON, Kirb.

De Bormans regards the species of this genus as probably mere varieties of his different subspecies of *Labidura riparia*; but they differ in the invariable absence of wing-scales, in the form of the forceps, and in the peculiar sculpture of the abdomen, and are, to the best of my belief, confined to South America. At present I recognize five species, which may not all be truly distinct:—(1) *lividus*, Dubr.; (2) *Batesii*, Kirb.; (3) *bicolor*, Kirb.; (4) *xanthopus*, Stål (= *adelphus*, Kirb.); (5) *patagon[ic]us*, Kirb.

Genus ANISOLABIS, Fieb.

Anisolabis Dubronii, n. n.

A. leta, De Borm. (nec Gerst.).

Gerstæcker's *Brachylabis leta*, from Kilimandjaro, has the sides of segments 6 and 7 of the abdomen and nearly the whole of segment 8 above strongly rugose, which is not the case in De Bormans's supposed *Anisolabis leta* from Texas.

Genus SPARATTA, Serv.

Sparatta plana, Burm.

S. apicalis, Kirb., is probably synonymous with this species.

Sparatta Dohrni, n. n.

Sparatta plana, Dohrn & De Borm. (nec Burm.).

Genus ANCISTROGASTER, Stål.

Ancistrogaster luctuosa, Stål, Dohrn.

A Brazilian insect. *Forficula petropolis*, Wood, also from Brazil, comes nearer to the description of this species than to the next, but may be distinct.

Ancistrogaster Burri, n. n.

Ancistrogaster luctuosa, De Bormans.

From Mexico and Central America.